



Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for
Norfolk M.C.I.

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

Susceptibility and Water Quality

Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area.

A source's susceptibility to contamination does *not* imply poor water quality.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, disinfecting, filtering, or treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Actual water quality is best reflected by the results of regular water tests. To learn more about your water quality, refer to your water supplier's annual Consumer Confidence Reports.

Table 1: Public Water System Information

<i>PWS Name</i>	Norfolk M.C.I.
<i>PWS Address</i>	2 Clark Street
<i>City/Town</i>	Norfolk, Massachusetts 02054
<i>PWS ID Number</i>	3208001
<i>Local Contact</i>	Normand Charbonneau
<i>Phone Number</i>	(508) 668-0800

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including storm runoff, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures.

Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes the following sections:

1. Description of the Water System
2. Land Uses within Protection Areas
3. Source Water Protection Conclusions and Recommendations
4. Attachments

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

Section 1: Description of the Water System

Zone II #: 550

Susceptibility: High

<i>Well Names</i>	<i>Source IDs</i>
Dug Well #1	3208001-01G
New Well #4	3208001-03G
Tubular Wells #2	3208001-04G

Norfolk M.C.I. maintains and operate three public water supply sources. Norfolk's sources are located within the Charles River basin. Dug Well #1 and New Well #4 each have a Zone I radius of 400 feet; tubular wells, such as the Tubular Wells #2, have a Zone I radius of 250 feet. The Dug Well #1 (01G), New Well #4 (04G), and Tubular Wells #2 (04G) wellhead protection area is located within the town's of Norfolk and Wrentham. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration.

For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html.

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

Section 2: Land Uses in the Protection Areas

The Zone II for Norfolk M.C.I. wells is a mixture primarily of forest and wetlands with a small portion consisting of residential, commercial, and mining land uses (refer to attached map for details). Land uses and activities that are potential sources of contamination are listed in Table 2, with further detail provided in the Table of Regulated Facilities and Table of Underground Storage Tanks in Appendix B.

Key Land Uses and Protection Issues include:

1. Residential Land Uses
2. Transportation Corridor
3. Oil or Hazardous Material Contamination Sites
4. Protection Planning

The overall ranking of susceptibility to contamination for Norfolk M.C.I. is high, based on the presence of at least one high threat land use within the water supply protection areas, as seen in Table 2.

1. Residential Land Uses – Approximately 11% of the Zone II consists of residential areas, which is served entirely by private septic systems. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems lead to the ground. If septic systems fail or are not properly maintained they can be a potential source of microbial contamination.
- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (UST and AST) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents.

Residential Land Use Recommendations:

Work with the Town of Norfolk to:

- ✓ Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet “Residents Protect Drinking Water” available in Appendix A and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.
- ✓ Work with planners to control new residential developments in the water supply protection areas.
- ✓ Promote BMPs for stormwater management and pollution controls.

2. Transportation Corridors - Roadway construction, maintenance, and typical highway use can all be potential sources of contamination. Accidents can lead to spills of gasoline and other potentially dangerous transported chemicals. Roadways are frequent sites for illegal dumping of hazardous or other potentially harmful wastes.

Catch basins transport stormwater from roadways and adjacent properties to the ground.

**When you wash your car in the driveway,
Remember
you’re not *just* washing your car in the driveway.**



All the soap, suds, and oily grit runs along the curb. Then into a storm drain and directly into our lakes, rivers, and streams. And that causes pollution which is unhealthy for everyone. So how do you avoid this whole mess? Easy! Wash your car on the grass or gravel instead of the street. Or better yet, take it to a car wash where the water gets treated or recycled.

The Massachusetts Department of Environmental Protection One Winter Street Boston, MA 02108

Source Protection Decreases Risk

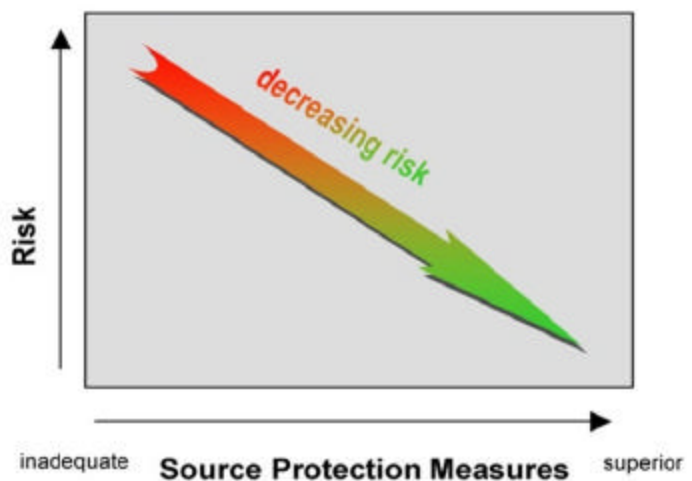


Figure 2: Risk of contamination decreases as source protection increases. This is true for public water systems of any susceptibility ranking, whether High, Moderate, or Low.

As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include substances from automotive leaks, maintenance, washing, or accidents.

Transportation Corridor Recommendations:

Work with the Town of Norfolk to:

- ✓ Regularly inspect the Zone II for illegal dumping and spills.
- ✓ Work with local emergency response teams to ensure that any spills within the protection areas can be effectively contained.
- ✓ Have catch basins inspected, maintained, and cleaned on a regular schedule. Regular street sweeping reduces the amount of potential contaminants in runoff.
- ✓ If storm drainage maps are available, review the maps with emergency response teams. If maps aren't yet available, work with town officials to investigate mapping options such as the upcoming Phase II Stormwater Rule requiring some communities to complete stormwater mapping.

4. Oil or Hazardous Material Contamination Sites – The Zone II contains three DEP Tier Classified Oil and/or Hazardous Material Release Sites indicated on the map as Release Tracking Numbers 3-0000977, 3-0001694, and 3-0015923. See the attached map and Appendix 1 for more information.

Oil or Hazardous Material Contamination Sites Recommendation:

- ✓ Monitor progress on any ongoing remedial action conducted for the known oil or contamination sites.

5. Protection Planning - Implementing protection measures and best management practices (BMPs) will reduce Norfolk M.C.I.'s wells susceptibility to contamination. Norfolk M.C.I. should review and adopt the key recommendations above and the following:

Training and Education:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- ✓ Post drinking water protection area signs at key visibility locations.

(Continued on page 6)

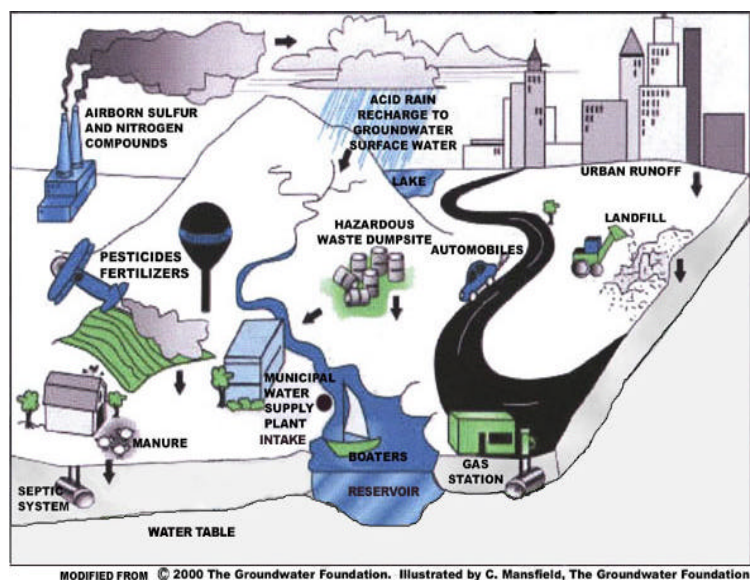


Figure 1: Sample watershed with examples of potential sources of contamination. MODIFIED FROM © 2000 The Groundwater Foundation. Illustrated by C. Mansfield, The Groundwater Foundation

Potential Source of Contamination vs. Actual Contamination

The activities listed in Table 2 are those that typically use, produce, or store contaminants of concern, which, if managed improperly, are potential sources of contamination (PSC).

It is important to understand that a release may never occur from the potential source of contamination provided facilities are using best management practices (BMPs). If BMPs are in place, the actual risk may be lower than the threat ranking identified in Table 2. Many potential sources of contamination are regulated at the federal, state and/or local levels, to further reduce the risk.

Table 2: Land Use in the Protection Areas (Zones I and II)

For more information, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area

Activities	Quantity	Threat*	Potential Source of Contamination
Agricultural			
Manure Storage or Spreading	1	H	Improper handling of manure (microbial contaminants)
Commercial			
Body Shops	1	H	Improper management of vehicle paints, solvents, and primer products
Golf Courses	1	M	Over-application or improper handling of fertilizers or pesticides
Bus and Truck Terminals	2	H	Spills, leaks, or improper handling of fuels and maintenance
Paint Shops	1	H	Spills, leaks, or improper handling or storage of paints, solvents,
Sand And Gravel Mining/Washing	1	M	Spills or leaks from heavy equipment, fuel storage, clandestine dumping
Industrial			
Petroleum Storage Facilities / Fossil Fuel Power Plants	1	H	Spills, leaks, or improper handling, or storage of petroleum products and equipment maintenance chemicals
Residential			
Fuel Oil Storage (at residences)	100±	M	Spills, leaks, or improper handling of fuel oil
Lawn Care / Gardening	100+	M	Over-application or improper storage and disposal of pesticides
Septic Systems/ Cesspools	100+	M	Microbial contaminants, and improper disposal of hazardous chemicals
Miscellaneous			
Aboveground Storage Tanks	1	M	Spills, leaks, or improper handling of materials stored in tanks
Landfills and Dumps	1	H	Seepage of leachate

Activities	Quantity	Threat	Potential Source of Contamination
Oil or Hazardous Material Sites	3	--	Tier Classified Oil or Hazardous Materials Sites are not ranked due to their site-specific character. Individual sites are identified
Prisons	1	M	Spills, leaks, or improper handling or storage of solvents, microbial waste, and other chemicals
Stormwater Drains/Retention Basins	Numerous/1	L	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns
Transportation Corridors	1	M	Accidental leaks or spills of fuels and other hazardous materials, over-application or improper handling of pesticides
Underground Storage Tanks	6	H	Spills, leaks, or improper handling of stored materials
Very Small Quantity Hazardous Waste	3	L	Spills, leaks, or improper handling or storage of hazardous materials and waste

Notes:

1. When specific potential contaminants are not known, typical potential contaminants or activities for that type of land use are listed. Facilities within the watershed may not contain all of these potential contaminant sources, may contain other potential contaminant sources, or may use Best Management Practices to prevent contaminants from reaching drinking water supplies.
2. For more information on regulated facilities, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
3. For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix C: Tier Classified Oil and/or Hazardous Material Sites.

* **THREAT RANKING** - The rankings (high, moderate or low) represent the relative threat of each land use compared to other PSCs. The ranking of a particular PSC is based on a number of factors, including: the type and quantity of chemicals typically used or generated by the PSC; the characteristics of the contaminants (such as toxicity, environmental fate and transport); and the behavior and mobility of the pollutants in soils and groundwater.

- ✓ Work with your community to ensure that stormwater runoff is directed away from the well and is treated according to DEP guidance.

Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, refer to <http://www.state.ma.us/dep/bwp/dhm/files/sqgsum.pdf> for the Requirements for Small Quantity Generators.
- ✓ Eliminate non-sanitary wastewater discharges to on-site septic systems. Instead, in areas using hazardous materials, discharge drains to a tight tank or sanitary sewer.
- ✓ Remove hazardous materials from rooms with floor drains that drain to the ground or septic systems.
- ✓ Floor drains in areas where hazardous materials or wastes might reach them need to drain to a tight tank, be sealed, or be connected to a sanitary sewer.
- ✓ Upgrade all oil/hazardous material storage tanks to incorporate proper containment and safety practices.
- ✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis.

What are "BMPs?"

Best Management Practices (BMPs) are measures that are used to protect and improve surface water and groundwater quality. BMPs can be structural, such as oil & grease trap catch basins, nonstructural, such as hazardous waste collection days or managerial, such as employee training on proper disposal procedures.

- ✓ Concrete pads should slope away from well and well casing should extend above ground.
- ✓ For transformers that may contain PCBs, urge the immediate replacement of PCBs with a non-toxic transformer oil. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Planning:

- ✓ Coordinate efforts with local officials to include Norfolk M.C.I.'s source protection areas in local wellhead protection controls. For more information on DEP land use controls see <http://mass.gov/dep/brp/dws/protect.htm>.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Other land uses and activities within the Zone II are listed in Table 2. Refer to Table 2 for more information about these land uses.

Identifying potential sources of contamination is an important initial step in protecting your drinking water sources. Further local investigation will provide more in-depth information and may identify new land uses and activities that are potential sources of contamination. Once potential sources of contamination are identified, specific recommendations like those below should be used to better protect your water supply.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

Conclusions:

These recommendations are only part of your ongoing local drinking water source protection. Additional source protection recommendations are listed the Key Issues above and Appendix A.

DEP staff, informational documents, and resources are available to help you build on this SWAP report as you continue to improve drinking water protection in your community. The Department's Wellhead Protection Grant Program and Source Protection Grant Program provide funds to assist public water suppliers in addressing water supply source protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the Grant Program. Please note: each spring DEP posts a new Request for Response for the grant program (RFR).

Other grants and loans are available through the Drinking Water State Revolving Loan Fund, the Clean Water State Revolving Fund, and other sources. For more information on grants and loans, visit the Bureau of Resource Protection's Municipal Services web site at: <http://mass.gov/dep/brp/mf/mfpubs.htm>.

The assessment and protection recommendations in this SWAP report are provided as a tool to encourage community discussion, support ongoing source protection efforts, and help set local drinking water protection priorities. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures. The water supplier should supplement this SWAP report with local information on potential sources of contamination and land uses. Local information should be maintained and updated periodically to reflect land use changes in the Zone II. Use this information to set priorities, target inspections, focus education efforts, and to develop a long-term drinking water source protection plan.

Benefits of Source Protection

Source Protection helps protect public health and is also good for fiscal fitness:

- Protects drinking water quality at the source
- Reduces monitoring costs through the DEP Waiver Program
- Treatment can be reduced or avoided entirely, saving treatment costs
- Prevents costly contamination clean-up
- Preventing contamination saves costs on water purchases, and expensive new source development

Contact your regional DEP office for more information on Source Protection and the Waiver Program.

Additional Documents:

To help with source protection efforts, more information is available by request or online at mass.gov/dep/brp/dws including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Section 4: Attachments

- A. Regulated Facilities within the Water Supply Protection Area
- B. Table of Tier Classified Oil and/or Hazardous Material Sites within the Water Supply Protection Areas
- C. Additional Documents on Source Protection

For More Information

Contact Anita Wolovick in DEP's NERO at (617) 654-6535 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, board of health, and the town.

APPENDIX A: DEP PERMITTED FACILITIES WITHIN NORFOLK M.C.I. WATER SUPPLY PROTECTION AREA

DEP FACILITY NUMBER	FACILITY NAME	STREET ADDRESS	TOWN	PERMITTED ACTIVITY	ACTIVITY CLASS
310344	HANDICAP MOBILITY INC	81 POND ST	NORFOLK	HANDLR	VERY SMALL QUANTITY GENERATOR OF WASTE OIL OR PCBS
262862	JOEL CONSTRUCTION	176 DEDHAM ST	NORFOLK	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
311580	KIESSLING TRANSIT INC	194 DEDHAM ST	NORFOLK	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
374339	MA DEPARTMENT OF CORRECTION	2 CLARK ST	NORFOLK	PLANT	AIR QUALITY PERMIT
374339	MCI NORFOLK	2 CLARK ST	NORFOLK	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE
132584	MCI NORFOLK	2 CLARK ST	NORFOLK	FULDSP	FUEL DISPENSER
36454	ROCKYS AUTO BODY	79 POND ST	NORFOLK	HANDLR	VERY SMALL QUANTITY GENERATOR OF HAZ WASTE

UNDERGROUND STORAGE TANKS WITHIN NORFOLK M.C.I. WATER SUPPLY PROTECTION AREA

FACILITY NAME	ADDRESS	TOWN	DESCRIPTION	CAPACITY (GAL)	CONTENTS
MCI-NORFOLK CDC WAREHOUSE	2 CLARK ST	NORFOLK	TRUCK/TRANSPORT	2000	FUEL OIL
MCI-NORFOLK CDC WAREHOUSE	2 CLARK ST	NORFOLK	TRUCK/TRANSPORT	4000	GASOLINE
MCI-NORFOLK POWER PLANT	2 CLARK ST	NORFOLK	STATE	25000	FUEL OIL
MCI-NORFOLK POWER PLANT	2 CLARK ST	NORFOLK	STATE	25000	FUEL OIL
MCI-NORFOLK POWER PLANT	2 CLARK ST	NORFOLK	STATE	500	DIESEL

For more information on underground storage tanks, visit the Massachusetts Department of Fire Services web site: <http://www.state.ma.us/dfs/ust/ustHome.htm>

Note: This appendix includes only those facilities within the water supply protection area(s) that meet state reporting requirements and report to the appropriate agencies. Additional facilities located within the water supply protection area(s) should be considered in local drinking water source protection planning.

APPENDIX B – Table of Tier Classified Oil and/or Hazardous Material Sites within Norfolk M.C.I. Water Supply Protection Area

DEP's datalayer depicting oil and/or hazardous material (OHM) sites is a statewide point data set that contains the approximate location of known sources of contamination that have been both reported and classified under Chapter 21E of the Massachusetts General Laws. Location types presented in the layer include the approximate center of the site, the center of the building on the property where the release occurred, the source of contamination, or the location of an on-site monitoring well. Although this assessment identifies OHM sites near the source of your drinking water, the risks to the source posed by each site may be different. The kind of contaminant and the local geology may have an effect on whether the site poses an actual or potential threat to the source.

The DEP's Chapter 21E program relies on licensed site professionals (LSPs) to oversee cleanups at most sites, while the DEP's Bureau of Waste Site Cleanup (BWSC) program retains oversight at the most serious sites. This privatized program obliges potentially responsible parties and LSPs to comply with DEP regulations (the Massachusetts Contingency Plan – MCP), which require that sites within drinking water source protection areas be cleaned up to drinking water standards.

For more information about the state's OHM site cleanup process to which these sites are subject and how this complements the drinking water protection program, please visit the BWSC web page at <http://www.state.ma.us/dep/bwsc>. You may obtain site -specific information two ways: by using the BWSC Searchable Sites database at <http://www.state.ma.us/dep/bwsc/sitellst.htm>, or you may visit the DEP regional office and review the site file. These files contain more detailed information, including cleanup status, site history, contamination levels, maps, correspondence and investigation reports, however you must call the regional office in order to schedule an appointment to view the file.

The table below contains the list of Tier Classified oil and/or Hazardous Material Release Sites that are located within your drinking water source protection area.

Table 1: Bureau of Waste Site Cleanup Tier Classified Oil and/or Hazardous Material Release Sites (Chapter 21E Sites) - Listed by Release Tracking Number (RTN).

RTN	Release Site Address	Town	Contaminant Type
3-0000977	34 Dedham St	Norfolk	Hazardous Material
3-0001694	111 Dedham St	Norfolk	Hazardous Material
3-0015923	2 Clark St	Norfolk	Oil And Hazardous Material

For more location information, please see the attached map. The map lists the release sites by Release Tracking Number (RTN).